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Phymaturus vociferator Pincheira-Donoso, 2004 (Squamata: Liolaemidae): new records and updated geographic distribution

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Abstract. *Phymaturus vociferator* Pincheira-Donoso 2004 was known until now only from type locality, Laguna del Laja, Biobío Region, Chile. Here, we report new records in the vicinity of Termas de Chillán and extend this species' distribution 58.3 km north of its type locality.

Key words. Range extension; Termas de Chillán; Chillan Volcano; Biobío Region; lizard; South America; Chile

Phymaturus is a genus of viviparous and herbivorous lizards that currently contains 46 species, distributed in the highlands of Chile and Argentina, and Argentine Patagonia, and revealing the high species diversity (Lobo & Quinteros 2005a, Morando et al. 2013, Lobo et al. 2016, Uetz & Hošek 2017). In Chile, the distributional ranges of the 7 recognized *Phymaturus* species are scarcely known, possibly due to a lack of adequate sampling in difficult accessible localities of the Andean highlands.

Phymaturus vociferator Pincheira-Donoso, 2004, the southernmost Chilean species of its genus, is only known from its type locality, El Refugio (37°20′ S, 071°18′ W), Laguna del Laja, 1,700 m, Antuco, Octava Región Administrativa de Chile (= Biobío Region), Chile (Pincheira-Donoso 2004). Following Pincheira-Donoso (2004), *P. vociferator* is the only *Phymaturus* species that can emit sounds when threatened. This species is diagnosed by the combination of the following characters: (1) sides of neck, shoulders and post-shoulders area black in males; (2) dorsum light brown with series of thick black crossbars in females; (3) absence of precloacal pores in females; (4) absence of large scales in the chest of the females; and (5) second chinshields separated in almost all specimens (Pincheira-Donoso 2004, Troncoso-Palacios & Lobo 2012).

In February 2014 and 2015, during fieldwork in the highlands of Chillán Volcano, which is 58.3 km north of the type locality at Laguna del Laja, individuals of *P. vociferator* were found at 4 new sites (Fig. 1): the volcanic rocks near to Termas de Chillán (36°53′ S, 071°24′ W, 1,895 m above sea level [a.s.l.]), Aguas Calientes Valley (36°54′ S, 071°24′ W, 1,993 m a.s.l.), Shangri-la Valley (36°51′ S, 071°26′ W, 1,876 m a.s.l.), and in the ruins of mountaineer shelter «Waldorf» (36°51′ S, 071°26′ W, 1,910 m a.s.l.) in Nevados del Chillán. Four specimens were collected under permit number 4468 issued by Servicio Agrícola y Ganadero (SAG) and deposited in Colección de Flora y Fauna Profesor Patricio Sánchez Reyes of Pontificia Universidad Católica de Chile (SSUC) (under the catalog numbers SSUC-Re 701, SSUC-Re 702, SSUC-Re 703 and SSUC-Re 704, Fig. 2). Measurements were taken with a GOLDTOOL digital caliper (0.01 mm precision) and scale counts under a stereomicroscope.

Individuals collected in the new localities exhibited the diagnostic characters (Table 1) of *P. vociferator* (see Pincheira-Donoso 2004), including vocalizations when they were manipulated. The identification was done by F. A. Urra (University

Table 1. Scale counts and measurements of *Phymaturus vociferator* from new localities and type locality. M = male, F = female, SCS = number of scales between the second chinshields, SVL = snout–vent length.*Data from Pincheira-Donoso 2004.

Specimen	Locality	Sex	Precloacal pores	SCS	SVL (mm)
SSUC-Re 703	Shangri-la valley	F	0	3	75.1
SSUC-Re 704	Shangri-la valley	M	8	3	90.8
SSUC-Re 701	Termas de Chillán	F	0	0	80.8
SSUC-Re 702	Aguas Calientes	M	11	1	89.8
*P. vociferator**	Laguna del Laja, Antuco	M = 7, F = 5	6–11	3–5	80.3–100.7

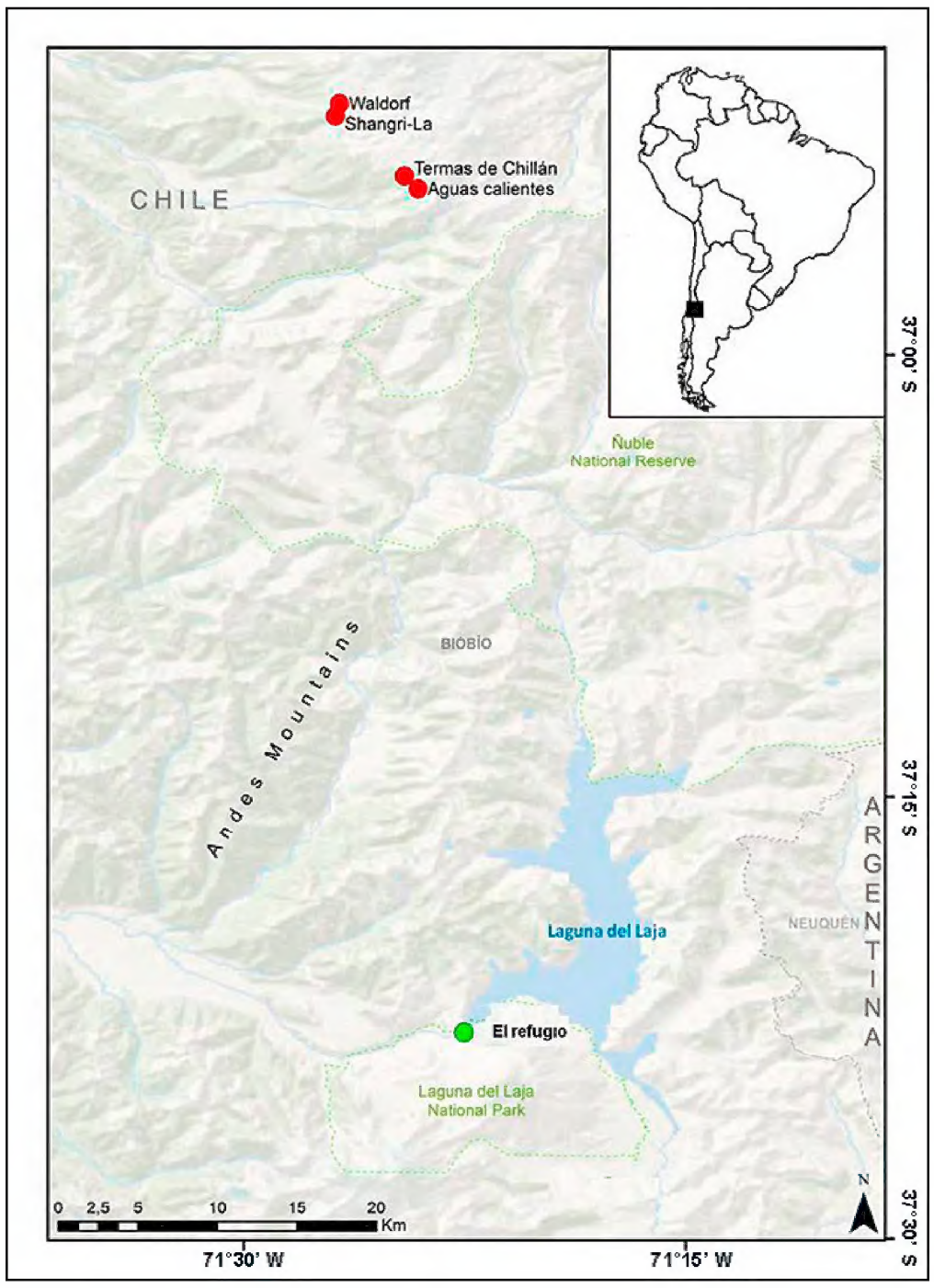

Figure 1. Distribution of *Phymaturus vociferator*, indicating the type locality "El Refugio" (green circles) and new localities (red circle): Termas de Chillán, Aguas Calientes, Shangri-lá valley and ruins of mountaineer shelter "Waldorf".

of Chile) and J. Troncoso-Palacios (University of Chile). In the highlands of Chillán Volcano and Termas de Chillán (Fig. 3), *P. vociferator* was observed in volcanic outcrops (Termas de Chillán and road to Aguas Calientes) or Andean vegas (Shangri-la) in sympatry with the lizard *Liolaemus chillanensis* Müller & Hellmich, 1932 and the snake *Tachymenis chilensis* (Schlegel, 1837).

Some studies have reported the presence of *Phymaturus* lizards from Termas de Chillán without a formal assignation of species (Lobo & Quinteros 2005b, Eisenberg & Werning 2012, Lobo et al. 2016). Lobo & Quinteros (2005b) suggested that this population may correspond to an undescribed species without major conclusions on its identity in a recent taxonomic review of the *P. palluma* group (Lobo et al. 2016) and Eisenberg & Werning (2012) named this population as *Phymaturus* cf. *palluma* in a report on the reproduction and biology of these specimens in captivity. These latter specimens were examined by us (see Appendix), confirming that our record of *P. vociferator* in Termas de Chillán corresponds to the same population previously reported for that location (Fig. 4). On the other hand, a recent book also suggested the presence of *P. vociferator* in localities near our records (Reserva Nacional Ñuble and Reserva Nacional Los Huemules de Niblinto) but did not show photographic documentation or collect specimens (Damangel 2016). Taking into account these details, we show

Figure 2. Specimens of *Phymaturus vociferator* from (**A**) Termas de Chillán, (**B**) Aguas Calientes, (**C**) Shangri-lá, (**D**) ruins of mountaineer shelter "Waldorf" (SSUC-Re 701, SSUC-Re 702, SSUC-Re 703 and SSUC-Re 704, respectively).

formally that these Termas de Chillán populations correspond to *P. vociferator*, a species previously known only from only its

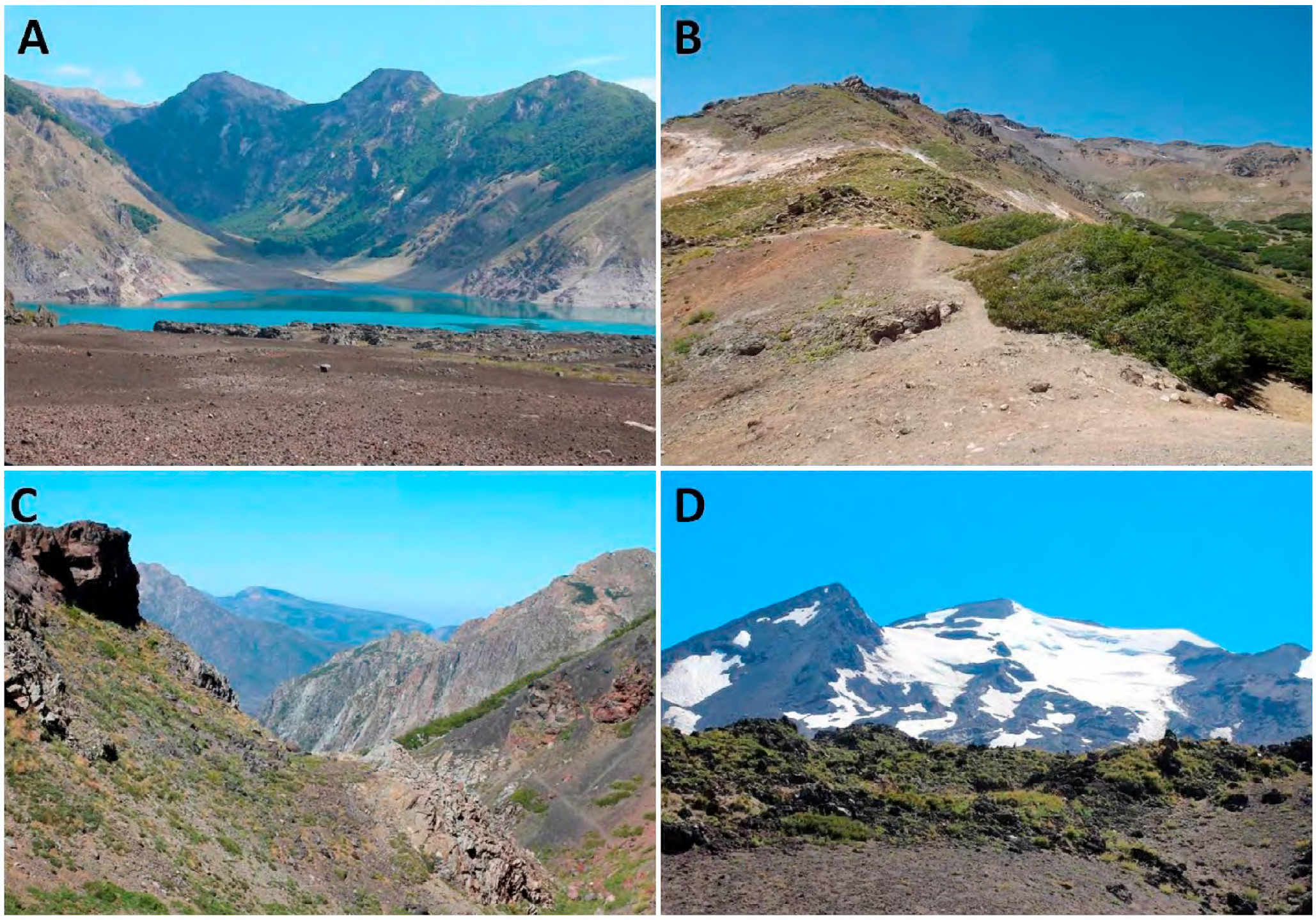

Figure 3. Habitats recorded for *Phymaturus vociferator*. **A.** Laguna del Laja. **B.** vicinity of Chillán Volcano, Termas de Chillán. **C.** Shangri-la Valley. **D.** vicinity of ruins of mountaineer shelter "Waldorf" in Nevados del Chillán.

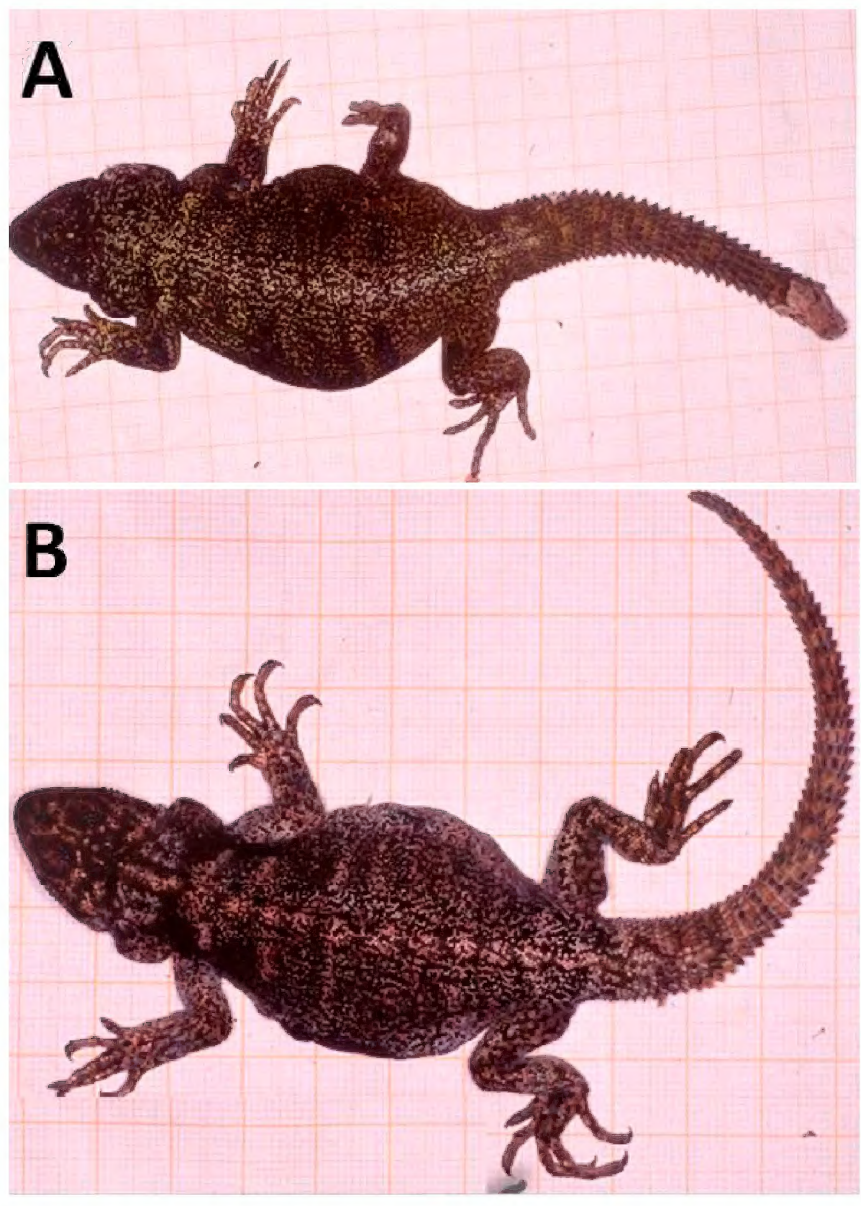

Figure 4. Specimens reported as *Phymaturus cf. palluma* from Termas de Chillán by EISENBERG & WERNING (2012). **A.** male. **B.** female.

type locality. Our new records expand the latitudinal distribution of this species by 58.3 km to the north (in a straight line), which may have important implications for the conservation policies of this endemic species.

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APPENDIX
Specimens examined

Abbreviations. MNHNCL: Museo Nacional de Historia Natural de Chile, Santiago, Chile; MRC: Museo Regional de Concepción, Concepción, Chile; MZUC: Museo de Zoología de la Universidad de Concepción, Concepción, Chile; SMF: Senckenberg Museum Frankfurt, Senckenberg Research Institute, Frankfurt, Germany; SSUC: Colección de Flora y Fauna, Profesor Patricio Sánchez Reyes of Pontificia Universidad Católica de Chile, Santiago, Chile.

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